STATE OF MINNESOTA DISTRICT COURT

COUNTY OF RAMSEY SECOND JUDICIAL DISTRICT

- -

The State of Minnesota,
by Hubert H. Humphrey, III,
its attorney general,
and
Blue Cross and Blue Shield
of Minnesota,

Plaintiffs,

vs. File No. C1-94-8565

Philip Morris Incorporated, R.J.
Reynolds Tobacco Company, Brown
& Williamson Tobacco Corporation,
B.A.T. Industries P.L.C., Lorillard
Tobacco Company, The American
Tobacco Company, Liggett Group, Inc.,
The Council for Tobacco Research-U.S.A.,
Inc., and The Tobacco Institute, Inc.,

Defendants.

- -

DEPOSITION OF BRIAN P. McCALL, Ph.D.

Volume II, Pages 236 - 314

(The following is the Deposition of BRIAN P. McCALL, Ph.D., taken pursuant to Notice of Taking Deposition, at the offices of Dorsey & Whitney, Attorneys at Law, 220 South Sixth Street, Minneapolis, Minnesota, on October 17, 1997, commencing at 8:38 o'clock a.m.)

APPEARANCES:

On Behalf of the Plaintiffs:

Thomas L. Hamlin
Robins, Kaplan, Miller & Ciresi, LLP
Attorneys at Law
2800 LaSalle Plaza
800 LaSalle Avenue
Minneapolis, Minnesota 55402

On Behalf of Philip Morris Incorporated:

Murray R. Garnick
Arnold & Porter
Attorneys at Law
Thurman Arnold Building
55 East Twelfth Street, N.W.
Washington, D.C. 20004-1202

Mark Ginder

Dorsey & Whitney

Attorneys at Law

220 South Sixth Street

Minneapolis, Minnesota 55402

E X A M I N A T I O N I N D E X

P R O C E E D I N G S

(Witness previously sworn.)

BRIAN P. McCALL, Ph.D.

called as a witness, being first duly sworn, was examined and testified as follows:

ADVERSE EXAMINATION (Cont'd)

BY MR. HAMLIN:

Q. Good morning.

A. Good morning.

Q. Professor McCall, yesterday I thought you testified that all the standard errors in the Zeger model were wrong. Is that correct?

A. I don't know if a hundred percent of them but a lot of them are.

Q. Did you calculate the standard errors in the Zeger model?

A. The correct standard errors? No.

Q. Did you observe the standard errors in the data that was provided in connection with the model?

A. The ones that they reported?

Q. Yes.

A. Yeah.

Q. And your conclusion from your observation was that those standard errors were wrong?

A. Not from the observation of the standard errors

themselves but from the model that they estimate and the manner in which they use inverse Mills, selection corrections and also various parts put in, predicted values. Those will affect the standard errors yet they don't correct for those effects.

Q. Did you attempt to make any calculation regarding the correct standard errors?

A. Not at this time.

Q. So you don't know what difference that would make in plaintiffs' damages; right?

A. Correct.

Q. Do you know of any observational studies that show that alcohol consumption eliminates the effect of smoking on disease?

A. I'm not aware of any at this time.

Q. Do you know of any observational studies that show that alcohol consumption materially reduces the effect of smoking on disease?

A. At this time I'm not aware of any.

Q. Do you know of any observational studies that show that lack of exercise eliminates the effect of smoking on disease?

A. Again not at this time.

Q. Do you know of any observational studies that show that lack of exercise materially reduces the

effect of smoking on disease?

A. Not at this time.

Q. Let's turn to page 13 of your report, which has been marked as Exhibit 4824.

A. Okay.

Q. There is a section H, entitled "The Impact of Smoking Controlling for Other Risk Factors." Do you see that?

A. Yes.

Q. Did you prepare this section or did Dr. Ahlburg?

A. I believe the first draft of this was prepared by Dr. Ahlburg.

Q. Have you reviewed the Zeger calculations on alcohol and exercise?

A. I have looked at the output, yes, of -- that they included in their computerized material.

Q. Do you recall that Zeger concluded that the omission of alcohol and exercise causes little change in smoking-attributable percentages?

A. I remember a statement to -- something to that effect.

Q. Do you recall yesterday we talked about the 1989 surgeon general's report which concluded that there were no studies that showed that any confounding factors have a material effect on the relationship

between smoking and disease?

A. I remember you showing me that statement.

Q. So Zeger's conclusion is consistent with the surgeon general's conclusion; right?

A. Well the -- My understanding was the surgeon general's conclusion with regard to disease where this -- this data, the dependent variables are hospital visits or doctor visits which need not necessarily be exactly identical.

Q. Well if the surgeon general found no observational studies where there were confounding effects that materially reduce the effect of smoking on disease, would you expect a different result on examining costs?

A. Potentially. I'm not aware of -- well let me back up.

Zeger et al do not look at costs in their regressions, they look at hospital visits and doctor visits, and I'm not aware of all the studies that the surgeon general was summarizing but doctor visits and hospital visits comprise a whole list of diseases, not just specific diseases. I didn't remember whether this statement was referring to smoking diseases or not. These hospital visits and doctor visits presumably are for anything so I don't think

you can necessarily compare the two situations.
Q. So you don't think that the two have any relationship?
A. Not necessarily.
Q. Do you know of any studies that show that lack of exercise or consumption of alcohol eliminates the effect of smoking on hospital visits, physician health care services?
A. Not off the top of my head.
Q. Have you done any investigation to find such studies?
A. Not at this time.
Q. If they exist, yeah.

Now have you made any study of the Medicaid program and specifically the demographics of the Medicaid population in Minnesota?
A. Any study of the Medicaid population. No detailed study, no.
Q. But are you aware that in any given year people go on and off Medicaid?
A. Yeah.
Q. And that these people who go on and off Medicaid are generally low-income people?
A. Generally, yeah.
Q. Now you're aware of the three reductions that

Zeger uses to obtain the smoking-attributable fraction; right?

A. Correct.

Q. The first reduction is called "How many smokers"; correct?

A. Right.

Q. And there, basically Zeger's doing is subtracting the number of nonsmokers; right?

A. Well, yeah, he is netting out nonsmokers.

Q. The second Zeger reduction is characterized as "How much extra disease"; right?

A. Right.

Q. And there Zeger is eliminating smoking-attributable diseases that would have occurred in smokers even if they hadn't smoked; right?

A. You are now referring to the core -- core model. They make an attempt to make some estimate of that.

Q. Actually, that reduction applies to the refined model as well; right?

A. The refined core.

Q. What do you mean by the "refined core"?

A. Rather than the diminished health status.

Q. You don't think that reduction applies to the

diminished health status?
A. Well I mean it's slightly different. It would be what they are attempting to do, and I don't agree they are doing it correctly, but is something like what would have been the health status of that individual had that individual not smoked or something like that.
Q. All right.
A. I don't know if I would characterize that as how much more disease or --
Q. But at least Zeger in his report calls this "how much extra disease reduction," one where he is attempting to determine the smoking-attributable disease that would have occurred in smokers even if they had not smoked; right?
A. Correct.
Q. And then the third reduction is characterized as "how many more dollars"; right?
A. Right.
Q. And there Zeger tries to subtract out the health care costs that smokers would have incurred even if they didn't get a smoking-attributable disease; right?
A. If memory serves me correctly, the -- what they do is they, as an example in the core model, look at

people, say, with lung cancer and once they determine that they have lung cancer they add in all -- all the expenses, whether they are lung cancer or not, and then what they do in this subtraction is subtract out expenses of another group of individuals, which they are I guess attempting to say would be the total expenses had they not -- I believe had -- well, I'm trying to remember if it's had they not smoked or had they not had lung cancer. But it's a -- it's not a lung-cancer cost they are looking at to begin with, it's total medical costs. That's what I -- Then they subtract out a number to reflect what the cost would have been.

Q. What the cost would have been even if they hadn't had a smoking-attributable disease?

A. Yeah, would have been --

Q. That's really a base line medical care cost; correct?

A. I believe that's what they are attempting to do.

Q. Now that base line medical expenditure would include expenditures for broken bones; right?

A. Right. It should -- it should include expenditures for whatever. I mean I think it's total expenditures.

Q. It could include expenditures poisonings.

(Interruption by the reporter.)

A. Right. I don't mean -- I believe whatever it was, it was just summed up overall expenditures.

Q. Now, if you turn to page 15 of your report.

A. Right.

Q. I want to direct your attention to section J, diminished-health-status model. Do you see that?

A. Yes.

Q. All right. You say that in the second sentence, quote, "We computed the SAF's implied by their model for this category when only expenses for mental illnesses, injuries (broken bones, punctures and the like), poisonings, venereal diseases, herpes, HIV, hernias, appendicitis, hearing loss, blindness diabetes, epilepsy, and male and female infertility for the Medicaid population are included and compared them to the SAF's that ZWM estimate for the Medicaid Population when all medical conditions are included." Now you use the term "implied" with respect to SAFs. Do you see that?

A. Yes.

Q. Now this SAF is something that you calculated; right?

A. Correct.

Q. It's not something that Zeger calculated; right?
A. Right. Well, yeah.
Q. How did you calculate this implied SAF?
A. What -- what I did was use the same models as Zeger, and this is in the diminished-health-status model, but instead of using the expenditures, the total expenditures like Zeger, just used expenditures for these particular conditions and then used their models, ran it, ran -- just substituted these expenditures and ran it through their models.
Q. Now Zeger did not limit the number of medical conditions included in the model; right?
A. I believe that's right.
Q. So if a person had lung cancer, all of the medical costs were counted for that person?
A. In diminished health status, I believe those, I think for the younger groups, there wasn't -- I mean it was all but I believe for the older groups, the lung cancers that were in the core analysis, those people were not in the diminished health status, if memory serves me correct, so those people would not be in there if they had a smoking-attributable disease that Zeger analyzed in either the lung cancer COPD group or heart disease groups.
Q. Let's just talk about the core disease model.

A. Okay.
Q. All right? Now if a person had lung cancer, all costs were counted in that model; right?
A. I believe that's correct.
Q. Now in the diminished-health-status model, people with lung cancer were not counted; right?
A. I believe for the 35 and over groups, that's correct. I believe for the younger groups, probably because there was so few maybe with those sorts of conditions, they didn't do a separate core analysis, for the younger groups and all those expenses I believe -- that's -- when I got the different versions that later report, I think that's what one of the differences was, was that they included those.
Q. In the diminished-health-status model, all costs were included except for those people who had major smoking-attributable diseases because those people were counted in another model; right?
A. Right.
Q. So the only costs that were excluded from the diminished-health-status model were major smoking-attributable diseases; right?
MR. GARNICK: Objection to form.
A. Well I guess it would be more the people because in the other model all the expenses, I mean if you

had a lung cancer and you had other expenses, you were -- those weren't allocated to the diminished-health-status model. They were in the core model.

Q. But if you didn't have a major smoking-attributable disease but you did have a report of poor health status, you would be in the diminished-health-status model; correct?

A. I believe everybody who didn't have -- who they didn't identify as having a smoking-attributable disease was put into the -- to the diminished-health-status model.

Q. And all of their costs were counted.

A. Yeah.

Q. Have you ever worked with ICD-9 codes prior to this case?

A. No.

Q. Now would you agree that in specifying a model you will -- you should at least consider other studies or other references to determine what variables might be important; right?

MR. GARNICK: Asked and answered from yesterday.

A. I think I already said that yesterday, in general.

Q. I think generally you said you ought to do that; right?
A. Correct.
Q. Now as you sit here today, do you know of any observational studies that suggest that smoking causes poisonings?
A. I don't know of -- I'm not aware of any.
Q. Do you know of any observational studies that suggest that smoking causes HIV?
A. Again I'm not aware of any.
Q. Do you know of any observational studies that suggests that smoking causes broken bones?
A. I'm not aware of any.
Q. So then would you agree there is really no basis for specifying a model to estimate a smoking-attributable fraction for poisonings, HIV and broken bones?
A. Well what I think is that a -- that a model that is supposed to identify smoking-attributable fractions should be able to, with some degree of accuracy, distinguish between diseases, that were at least in my opinion not attributable to smoking and those diseases that are. That was the point of this.
Q. Have you tested any other models on the health care expenditures of smoking-attributable diseases to

see whether those models come up with SAFs for broken bones?

A. Not at this time.

Q. Let me ask you about HIV. Have you made any determination that there are no background conditions caused by smoking that complicate the treatment of HIV?

A. No, I haven't made a study of that.

Q. Would you agree that persons with HIV often have pneumonia complications?

A. They may have, I -- I'm not a hundred percent sure.

Q. Don't you think that smoking might make these pneumonia complications worse?

A. I have no evidence either way.

Q. Okay. But what would your prediction be?

MR. GARNICK: I'm going to object to the form.

A. Well I really don't know. I mean, especially in this context, I mean are you talking about current smokers, former smokers?

Q. You have a person that has HIV and pneumonia and he smokes. Do you think that's going to make that condition worse or better?

MR. GARNICK: Objection to form.

A. I, you know, don't know scientifically the evidence and my opinion, I really don't have an opinion on that either way, I don't think.
Q. You don't have any idea what smoking would do to someone who has HIV and pneumonia?
A. Not really unless you gave me -- I mean I can't tell on an individual person how that would affect them, if they smoked one cigarette, 20, 50, if they are current, former. I don't really know.
Q. And you made no investigation to see what effect smoking might have on that kind of individual; right?
A. Right.
Q. Have you examined the Medicaid data in Minnesota to see how many HIV victims have respiratory diseases caused by smoking?
A. No, not at this time.
Q. Do you agree that having a respiratory disease caused by smoking could complicate and thus increase the cost of treating HIV?
A. Again I don't have any information either way.
Q. And you don't have a belief either way?
A. Not really. I've never really thought about it much.
Q. Now have you looked at the Medicaid information in Minnesota to see how many people who had an

appendicitis also had emphysema?

A. Well at least for some groups. I don't think in this analysis emphysema for, well, the older individuals, that would not be in the sample so I don't know if that would be relevant.

Q. I'm asking you if you did an examination --

A. I haven't, no, no.

Q. -- of the Minnesota Medicaid data to determine how many people who had appendicitis also had emphysema.

A. Not at this time, no.

Q. Do you think emphysema would be a complicating factor for postoperative recovery?

A. Potentially but again I have no scientific evidence either way.

Q. And you haven't examined those costs to see whether or not there is an increase because of emphysema.

A. No, not at this time.

Q. Now would you agree that people who are mentally ill often take medication?

A. Yeah, I would agree that's true.

Q. Have you looked at the Minnesota Medicaid data to determine the interactive effect of smoking and medications taken by those who are mentally ill?

A. Not at this time.
Q. Do you know whether the surgeon general of the United States has linked smoking and osteoporosis?
A. Off the top of my head, I don't know either way.
Q. Would you agree that osteoporosis often leads to broken bones?
A. I believe that's true.
Q. If you would turn to page 17 of your report.
A. Okay.
Q. You state in the first full paragraph that you received corrected computer files from the plaintiffs' experts. Do you see that?
A. Yes.
Q. Have you now had time to fully incorporate those changes in the corrected computer files into your database?
MR. GARNICK: I want to make a work-product objection.
MR. HAMLIN: I'm just asking him if he had time to do that, that's all.
MR. GARNICK: Had time, okay.
A. I haven't -- I haven't investigated and gone through to make sure or to analyze each and every correction yet.

Q. Have you reviewed any studies showing the health care costs of treating nursing home residents for smoking-attributable diseases?

A. Again just my memory that -- that some of the -- part of Manning's book had nursing homes in it but --

Q. But you didn't read Manning's book; right?

A. No. Just to the extent that I saw some tables but I didn't read it carefully.

Q. Do you know of any nursing home studies that measure the cost of treatment for smoking-attributable diseases conditional on persons being alive?

A. Can you -- what was the first part, was it smoking?

Q. Do you know of any studies that measure the costs of treatment of smoking-attributable diseases conditional on people being alive?

A. I'm not aware of any.

Q. But you made no systematic study of the health care costs -- strike that -- of the studies regarding health care costs for smoking-attributable diseases in nursing home residents; right?

A. Not at this time.

Q. And as I understand it, you glanced at some tables in Manning's book but that's the extent of any

work that you have done with respect to nursing homes; is that right?

A. At this time.

Q. Now in your work as an academic, have you had occasion to review studies for literature regarding nursing homes?

A. I don't believe so but I may have. I don't remember any.

Q. And so I take it you wouldn't know if there were any nursing home studies regarding the costs of smoking-attributable diseases that were done over a period of either one year or two years.

A. Again not at this time, I'm not aware of any.

Q. Would it surprise you if there were those kinds of studies?

A. That only looked at a one-year period? In terms of costs?

Q. Yes.

A. Well I mean I'd have to look at the studies in more detail to see exactly what they were doing before I made any judgment of whether I thought that was appropriate methodology or not.

Q. Now apart from this case, have you ever done a study of nursing home residents to ascertain medical care costs for smoking-attributable diseases?

A. No.
Q. Let me direct your attention now back to page 17.
A. Okay.
Q. Section K, "Smoking Attributable Health Care Expenditures for Maintenance Nursing Homes," do you see that?
A. Yes.
Q. In the second sentence, you state, "Since ZWM assume away any differences in per day costs between ever and never smokers, they do not have to consider 'how much more dollars.'" Do you see that?
A. Right.
Q. Now are you saying that there are differences in per-day costs? I'm not sure what you mean by that sentence.
A. Well I don't think there was any investigation, at least for maintenance costs, by ZWM, Zeger et al, and they do not incorporate any potential differences. Now at this time I don't know if there are, if there are, which way it goes, but I'm saying that they are treating them as if there are no differences.
Q. And as you sit here today, do you know if there are any differences?

A. Not at this time, no.
Q. You made no investigation of that?
A. Not at this time.
Q. Now Zeger et al stratified by age; right?
A. Correct.
Q. And they also stratified by sex; right?
A. Correct.
Q. And do they stratify by any other category?
A. Well I mean they are already comparing ever to never smokers but other than that, none, no, I didn't see any.
Q. Let me turn you to page 18 now. You've got a calculation here on page 18 that you describe as the percent extra disease attributable to smoking. Do you see that?
A. Right.
Q. Okay. Let me take you through that. You say in the example that they provide on page 28, referring to Zeger, ever smokers spend on average four-eighths in nursing homes while never smokers spend three-eighths and then you calculate it; right?
A. Right.
Q. Now in fact --
A. There may be a typo here.
Q. There is a mistake in that calculation; right?

The denominator should be four-eighths; right?
A. Right. I didn't catch that.
Q. That's all I wanted to clarify. I wanted to make sure that I wasn't wrong about that.
A. No, that's right. It's just a typo.
Q. Okay. Now extra time calculations are made for men and women for every age between 55 and 94; right?
A. Correct.
Q. Have you examined whether age has any relationship to Medicaid expenditures for nursing home residents?
A. Actual expenditures?
Q. Yes.
A. Not at this time.
Q. Are you familiar with the term "spend down"?
A. No.
Q. Let me direct your attention to page 19.
A. Okay.
Q. That first full paragraph on page 19 begins with the sentence "The ZWM nursing home analysis is severely flawed." Do you see that?
A. Yes.
Q. Then you lay out what you call the correct way to calculate the expenses attributable to smoking. You say that to calculate the expenses attributable

to the alleged wrongful conduct one needs to calculate actual costs and compare them to costs that would have occurred had the defendants' conduct not occurred; right?

A. Correct.

Q. Then you say this "poses several obstacles."

A. Right.

Q. Right? You need to know when the wrongful conduct first occurred; correct?

A. Right.

Q. And then you need to predict how the behavior of those who actually smoked would have been modified if the wrongful conduct had not occurred; right?

A. Right.

Q. And then third, you need to estimate how such behavioral changes would have changed costs, in this case nursing home costs; right?

A. Right.

Q. Have you prepared such a model?

A. That fully incorporates all of these?

Q. Yes.

A. Not at this time, no.

Q. Have you asked the tobacco companies if they have such a model?

A. No, I haven't asked them.

Q. Now if you were going to prepare such a model for nursing homes, what data sets would you use?
A. Well I would -- If I were to do this and had a lot of time to do it, I would again try to go through and see what data is out there. I might potentially use NHANES at one point but again I would have to sort of make a detailed examination.
Q. I take it you have not made that kind of examination of NHANES at this point; right?
A. Not at this time.
Q. So can you identify any data sets as you sit here today that you know would be used by you in preparing such a model?
A. Well I probably would ultimately use some of the Medicaid data from MSIS, at least to get the cost data from. I'm sure that would be included. But at this time, the exact data and the exact manner in which each data set was used, I can't tell.
Q. You can't tell me?
A. At this time.
Q. Let me direct your attention to page 20.
A. Okay.
Q. About halfway down the first full paragraph.
A. Right.
Q. You say, "Among men ever-smokers, 98.7 percent

had begun smoking before 1960."

A. Right.

Q. Do you see that? Now this is for both NHANES and NMES or is that just NMES? I want to be sure I'm right about this. I'm not trying to trick you here.

A. Yeah, I know.

Q. I'm just not quite sure.

A. I don't know if that's a typo or not. Those table numbers don't appear to be correct. I believe what I'm referring to is simply the -- the -- the NHANES or NHEFS, and I think those table numbers should be just Tables 18 and 19.

Q. Okay, okay.

A. So it's another typo.

Q. So what you're saying, then, is that in NHANES, 98.7 percent of the men ever smokers had begun smoking before 1960?

A. Right.

Q. Similarly, in NHANES, 92.5 percent of the women ever smokers have begun smoking before 1960; right?

A. Correct.

Q. Then you say, "Thus, for these individuals the proper comparison using the ZWM ever-smoker/never-smoker dichotomy must be with ever smokers since had information on the health effects

of smoking been released in 1960 they would have started smoking anyway."

Now is that conclusion that these people would have started smoking anyway based on a survey that you have seen?

A. Well the conclusion is based on -- again I'm giving an example or hypothetical of a 1960 date and just assuming that -- well not assuming but given this date, 1960, people can't go back in time and undo their behavior, and if the actions occurred at 1960 and had those actions not occurred and they in fact -- let's assume they would have quit right whenever actions that had occurred, if they didn't occur, they still would have begun smoking anyways. You can't go back in a time capsule. So they still would have been ever smokers, that's what I mean by that statement. It's based on the assumption of 1960.

Q. 1960 as being the date when the tobacco companies disclosed the --

A. Assuming the wrongful conduct, whatever it is, occurred then -- right? -- that had it not occurred, they would have started smoking anyways because whatever information or whatever, you know, would have been revealed had the conduct not occurred,

would have occurred after they started smoking anyways, so they still would have been ever smokers.

Q. Well if the conduct had not occurred --

Let's talk about specific conduct. Let's suppose the tobacco companies had come out and disclosed the health care risks of smoking cigarettes in 1960. Are you saying that these people, all of them would have smoked anyway?

MR. GARNICK: Objection to form.

A. I'm saying those people who started smoking before 1960 and so therefore in this world would have not learned of that information until after they started smoking would still be ever smokers the way that it's classified in Zeger et al. Since the action would have occurred after they started smoking anyways, they still would have been an ever smoker. Whether they quit right when they heard the information being released or whether they kept smoking, they couldn't jump back in time and undo what they already have done.

Q. Are you saying Zeger would have classified them as ever smokers because they smoked before 1960?

A. Right. The -- I think the determination of the ever smoker is based on a question in '82 of the nature have you ever smoked more than a hundred

cigarettes. It didn't ask whether you started at a certain time or not.

Q. And so you are saying that for these individuals the smoking-attributable expense must be equal to zero?

A. If you take their dichotomy literally, I mean if -- all I'm doing here is doing this one change, let's say, okay, let's do their model, right, but now let's -- they are comparing ever smokers to never smokers; right? And I'm saying that, well, you know, one problem with their approach is that they ignore when this behavior occurred -- right? -- and for these individuals, this is just an example date, 1960, if these individuals started smoking before 1960, in the actual world they are ever smokers but in the counter factual had the action never occurred -- or, excuse me -- yeah, the behavior, wrongful conduct, whatever you call it, had not occurred, they still would have been ever smokers. So in that case if you are doing this ever-never dichotomy, the proper comparison should be an ever with a ever.

Q. So in that situation, you wouldn't take into account whether people quit smoking after 1960; correct?

A. Here what I'm assuming, for the ever-never

comparison, for these individuals, if you keep that comparison, now you might have to redo your whole model and maybe bring in other facts but for, you know, just taking their model at face value but only making that change, right, for those individuals it would just be this ever versus ever. Now for those who start smoking after 1960 -- right? -- you know, you would have to make some assumptions about whether they would have started anyways or not had the wrongful conduct not occurred. But again these individuals can't jump back in time and undo it so they still would have been ever smokers.

Q. And are you assuming in the counter factual world that they didn't smoke or are you assuming in the counter factual work that they did smoke? That's what I'm having trouble with.

A. No. What I'm saying is, there are several things that are a problem in the nursing home -- well in all of the Zeger analyses. I'm just looking at one aspect in this example or in this paragraph. I'm sort of saying, okay, do a proper comparison -- excuse me -- a proper calculation of economic damages, what you need to do is you need to know when the behavior or wrongful conduct occurred, and here I assume, let's say, 1960, use that as an example;

okay? And what I'm saying is, every individual who started smoking before 1960 in the counter factual still would have smoked because a proper counter factual is, you know, this behavior occurred in 1960 and since you can't go back in time and change what you've already done, for those individuals, you need to compare them to somebody, I mean, who started smoking. Now here, since they are not looking at, for example, a person who smoked -- started in 1940 -- right? -- continued, let's say, to 1990, so that's a 50-year smoker -- right? -- and then they are not in this model looking at a person of -- I mean what you might want to do is then look at a person who started in 1940 through 1960 -- right?-- so smoked for 20 years and maybe, depending on how you look at it, maybe they would have quit. Then you would want to look at, you know, comparing them in 1961 with a 21-year smoker compared to a 20-year smoker who had quit for one year and keep doing those comparisons over time. That might be a different approach but Zeger doesn't take that approach. All they are doing is looking at had they ever smoked and comparing them to never smoked. If you take that type of approach but incorporate the fact that in the true counter factual these individuals who started

smoking would have smoked before 1960, then, because the behavior didn't occur until 1960, then if you are just doing the simple dichotomy you have to compare the ever with the ever. Now you might change the whole model and redo it if you didn't like to do that, but I'm just saying taking their model literally and only looking at this one aspect you should compare an ever to an ever.

Q. Whenever you compare ever to an ever you are always going to get zero; correct?

A. Right.

Q. You are not saying in order to calculate health care expenditures for smoking-attributable diseases you should always compare a current smoker to a current smoker; right?

A. No. What I'm saying is that had Zeger et al left everything the same but maybe incorporated the timing of the action but still did an ever-never comparison -- excuse me, just did an ever-never dichotomy, they properly accounted for the time of the action, and even if the assume whether or not they quit in 1960 or not, whenever that is, these individuals who started smoking before 1960 in the counter factual, in the comparison, it has to be an ever-ever comparison. Now they might want to change

their whole model, you know, if they wanted to incorporate the timing of the action. I lay out several other problems which suggests that they should do a completely different model but --

Q. Suppose the fraud of the tobacco companies continues from 1960 through present day, how does that change?

A. Doesn't change this analysis because if I started smoking in 1940, it doesn't matter whether they, you know -- I still would have smoked in 1940 no matter what the tobacco company did in 1960, '61, '62, '63. It's occurring before in time and there is no way I can somehow magically go back and say I'll just undo what I did 20 years ago.

Q. And so you're saying that in at least in this example the proper comparison is to compare an ever smoker to a never smoker to get the difference between the health care expenditures for those who smoke and those who don't?

A. Only for those who started smoking before the action occurred. If you want to stick to that dichotomy, comparing evers to nevers -- right? -- then in a proper way to look at the effects using that simple dichotomy, which is not necessarily a correct way to look at it but if you are stuck with

that dichotomy, then for those who started smoking before the action occurred they would have started smoking had the action not occurred, so they would have been an ever smoker whether -- irrespective of what the tobacco companies did in 1960. Therefore, you must compare them with an ever given that you are using this dichotomy, so it should be a ever ever.

For those who started smoking after 1960s, assuming that's the date, then you need to worry a little more about would they have started smoking had the tobacco companies revealed the information or whatever, you know, actions they did, that would be more difficult task to determine what was the likelihood they would have started smoking anyways. But for those that started smoking before, you can't go back in time, so there you would only compare evers with evers.

Q. Now what Zeger et al did was simply count up the dollars for those people who were actually alive in nursing homes; correct?

A. I believe so. That's -- They look at it sort of -- they control -- they look at it for each age and do an age breakdown but --

MR. GARNICK: Let me just interject, and I don't know if this is appropriate or not but I'm

looking at the screen as this testimony takes place and lot of times when the word "ever ever" was used I read ever never and we are going to have to go back and make sure it's accurate, but if you look at it, the same thing with you Tom, sometimes you say "ever ever" and it shows up to be "ever never." I just want to alert people on that.

(Discussion off the record.)

BY MR. HAMLIN:

Q. All right. Back to page 20 of your report.

A. Okay.

Q. In the second full paragraph, you say, "Even if we assume that all smokers had quit smoking in 1960, 57.5% of these male ever smokers would have still smoked for more than 15 years."

A. Right.

Q. And then you say, "An appropriate calculation of smoking attributable expenses for nursing homes, would need to model the relationship between years of smoking and 'how much more time' and then investigate how the distribution of years of smoking would have changed had the defendants' made public their private information about smoking." Now you have not calculated this model; right?

A. Right.

Q. So you don't know what difference, if any, it would make in plaintiffs' damages; right?
A. Not at this time.
Q. Let me direct your attention to page 21.
A. Okay.
Q. At the top of the page you state that "What matters for nursing home costs is the total amount of time spent in a nursing home." That's -- And you underlined "total amount of time"; right?
A. Right. In this -- I mean again going back to the assumption that there is no particular cost differences per unit of time.
Q. Can you identify one study of health care costs for smoking-attributable diseases for nursing home residents that supports that statement?
A. Well it again, I think I refer to a paper that's coauthored by a number of people including Manning and Newhouse which said that the appropriate way to look at the effects of costs, on cost of smoking, would be to take a longitudinal approach. In some sense this is -- given that we are assuming costs being equal per unit time, which may or may not be true but I have no information either way at this time, this is sort of essentially just restating a longitudinal approach is correct.

Q. Yesterday you mentioned an article in the New England Journal of Medicine that you glanced at; right?

A. Right.

Q. I believe that was a study done in is it Denmark?

A. I think it was Holland.

Q. Holland. Now in that study do you recall that the authors concluded that in each age group smokers incur higher costs than nonsmokers and that the difference varies with age group but among 65 to 74 years the costs of smokers is perhaps as 70 percent higher in men and as much as 25 percent higher in women?

A. I think remember looking at that part but I don't recall exactly the numbers.

Q. So you recall that conclusion but not the specific numbers; right?

A. I remember them saying something about higher costs and various age groups.

Q. Now they look at lifetime costs; right?

A. Right. I think they were doing at least somewhat of a longitudinal approach.

Q. Right. And they called it "lifetime costs."

A. I think they may have. I don't remember exactly

that phrase.
Q. And is lifetime -- Strike that. Does the phrase "lifetime costs" to you mean longitudinal?
A. Well I don't know. I mean in one -- I've gone through how I think you should calculate costs. I don't know what labels are necessarily attached to that.
Q. You called it longitudinal; right?
A. Yeah, or cohort or maybe somebody might refer to it as lifetime but I don't think I would call it that.
Q. You don't think you would call it lifetime?
A. No, because I would call it -- again I would say, you know, the correct approach would be to track individuals over time, constructing the appropriate counter factual to whatever you are looking at. In this case it would be what would have happened had these actions not occurred and look at the costs over time. Now I could define time as from now or whenever that action occurred to infinity; all right? Ultimately, probably, down the road there will be a lot of zeros there.
Q. The New England Journal article looked at costs over time; right?
A. I believe so.

Q. Okay. Now do you recall the authors concluded that even a well-designed study of this type, referring to their study, is marred by inevitable arbitrariness concerning what costs to include, which discount rate to apply and what duration of follow up to use?

A. I don't remember the exact sentence. Like I said, I glanced at it. I don't recall every single sentence.

Q. Do you recall that --

MR. GARNICK: You might want to give him the article.

MR. HAMLIN: I didn't predesignate it.

MR. GARNICK: Well if you want -- I don't have objection if that's what you want to do but I'll leave it to you.

BY MR. HAMLIN:

Q. Do you agree with that statement?

A. Well I agree that in any study you are limited by data and are going to ultimately make certain assumptions.

Q. Because this study was out into the future; right? This didn't look at actual costs in the past; right?

A. Again I glanced at it, so my memory might not be

a hundred percent accurate, but I think they were trying to -- I don't know if there was calendar time involved, I can't remember, or whether it was just time is, you know, assuming that there was some stop in smoking. Now the stop might be today. I don't remember if they -- when they timed that stopping, what would be the cost consequences in terms of medical costs over time. Again I didn't read it very carefully so --

Q. Let me ask you this. They concluded there are differences of opinion on the discounting of lifetime costs, for example, and the evaluation of long-term effects. Do you agree with that?

A. Well I'm sure there is bound to be academics who have feelings that differ.

Q. And they also concluded that recent efforts of standardization will remedy some of the arbitrariness but fundamental problems with the methods still remain. Do you agree with that?

MR. GARNICK: I'll object to form.

A. Again, you know, I, glancing at the article and not doing a careful study of all the literature, when you say fundamental problems of the methods, I would have to see all the different sorts of methods that have been used.

Q. It was -- The statement was: Recent efforts of standardization will remedy some of the arbitrariness but fundamental problems with the method, referring to the method of lifetime costs calculation, still remain.

MR. GARNICK: Objection to form.

Q. Do you agree with that statement?

A. Well I -- Well again what they refer to lifetime costs, I'm unsure of, but when you are looking at economic damages, I think the correct economic methodology is to do an approach that I've already outlined, which in part has the longitudinal aspect to it. I think that's the correct approach.

Q. Now these authors did a study of lifetime costs and they themselves say that there are still fundamental problems with the method. Now are you disagreeing with them?

A. I don't know what they mean by "method." Again I don't remember exactly what they did and what assumptions were imposed where and they may, due to data limitations and so on and so forth have some problems that remain with the method, but I think the correct approach for looking at economic damages which relates to this case is again an approach which looks at when the action occurred and has to in some

sense estimate or calculate what the costs would have been had the action not occurred and look at that over time.

Q. Would you agree that there is at least a difference of opinion among academics about whether there are fundamental problems with this lifetime cost approach?

MR. GARNICK: Objection to form.

A. Well I don't know but I guess if you have got a hundred academics in a room they wouldn't always agree on everything, but again I'm unclear what they mean by "method" here and, you know, I -- I wouldn't know.

Q. I mean you are just not familiar enough with the literature to really reach any conclusions about what other academics have said about this method of calculating lifetime costs; right?

MR. GARNICK: Objection to form.

A. I'm not familiar with the literature that you are referring to but in terms of doing economic damages and in economic methodology I think is pretty clear that the way I state is the appropriate way to do it.

Q. But others have done it differently; right?

A. Well Zeger did it differently.

Q. Do you know if other researchers have done it differently?
A. Yeah. I haven't made a detailed study of that particular literature.
Q. Now would you agree that Zeger measured the actual health care costs extended -- expended by the state of Minnesota by counting what was spent on people who are alive in nursing homes?
A. I think he -- he calculated total or -- well maybe he broke it down by age but he looked at what Minnesota spent on nursing home care from the MSIS.
Q. And Minnesota spent money on people who were alive; right?
A. Right. Typically that's -- that's true.
Q. Okay. Now you give an example on page 22. You say you studied NHANES for the period approximately it looks like 1982 to 1992; right?
A. Right.
Q. And --
A. You are at the bottom.
Q. Actually I'm at the bottom of page 22 and top of page 23.
A. I'll point out I see another typo, so --
Q. Sure.
A. I think that "Our initial findings are that, for

both men and women, never-smokers were more likely to spend time in nursing homes than never-smokers." It should be "ever."

Q. All right. Okay. If you go over to page 22 [sic.], you say that by your calculation the nursing home costs of smokers who never smoked would have increased by $2.03 billion over this time period; correct?

A. Right.

Q. Did you calculate a smoking-attributable fraction?

A. Yeah. I believe essentially the 31.4 percent and 106.3 percent would be similar to what we would be calling -- it's how many more days type of calculation. So that goes to --

Q. When you say 31.4 percent are you referring to the 31.4 percent in the last sentence on page 22?

A. Right.

Q. That refers to male never smokers; right?

A. Right.

Q. And 106.3 percent is at the top of page 23 and refers to female never smokers; right?

A. Right.

Q. And you are calling those smoking-attributable fractions?

A. I'm saying -- I'm not calling -- like I said, I'm not saying what I call smoking-attributable fractions. I think what I'm saying is that in the counter factual, again in the simple case I'm just looking at ever versus never, ignoring these other issues of when they started smoking, so here I'm not -- I'm just looking at one aspect of the analysis. Suppose we keep everything else Zeger did but look at it longitudinally, what I'm saying is, had this ever smoker never smoked in the counter factual -- all right? -- for men the amount of nursing home days would have gone up by 31.4 percent and for women it would have gone up by 106.3 percent.

Now that's not a smoking-attributable fraction per se but it's used in those -- those are what I used in the calculations to come up with that 2.03-billion-dollar number.

Q. But you're conclusion was that never smokers were more likely to spend more time in nursing homes than ever smokers; right?

A. Yeah, that was another result that I found, I list at least in the tables.

Q. You did find that smokers were present in nursing homes; right?

A. I'm sure I did. I didn't look exactly at the

individual data but if you look at Table 21, for example, ever smokers, the percentage who stayed in nursing homes over that period were greater than zero, so there must have been smokers in nursing homes.

Q. You didn't look at the individual NHANES data in doing your calculations?

A. I looked at the -- I used the individual data but I didn't look at each record individually. I mean I wrote programs to analyze the individual data but I mean I didn't go and pick out one record and, you know, actually identify an individual smoker and then say person number, you know, ID number 5444 or whatever, you know, was in a nursing home but I analyzed the individual data.

Q. But you agree that you did find the fact that there was --

A. Yeah.

Q. -- smokers --

A. -- given the fact their percentages aren't zero.

Q. Now let me direct your attention to Table 20.

A. Okay.

Q. Did you prepare Table 20?

A. Yes.

Q. And you call it "An example of ZWM's 'How Much More Time Calculations'"; right?

A. It has that in it but also has other -- other things.

Q. Now this calculation is certainly not based on any hypothesis that the -- strike that -- on any comparison between -- well, let me ask it this way.

This particular table is not based on an examination of the effect of defendants' wrongful conduct on smokers in nursing homes; right?

A. No, it's just an illustration of how their approach might give you the wrong answer.

Q. And when you say back on page 23 that we find that had smokers never smoked their nursing home costs would have gone up over $2.03 billion over this time period, you are not basing this on a model that takes into account the effect of defendants' wrongful conduct; right?

A. No. They are --

Q. That's right, isn't it?

A. Yeah, that's right.

Q. Okay. So let's go back to Table 20.

A. Okay.

Q. Now as I understand it, in the first column you have listed ever smokers and never smokers; right?

A. Right.
Q. And you basically identified six ever smokers and six never smokers; right?
A. Right.
Q. And you identify them as E1 through E6 and I take it that the E stands for ever?
A. Right.
Q. And the never smokers are identified as N1 through N6 and I take it that's to identify them as never smokers; right?
A. Right.
Q. Then as I understand it, in order to read this table, you look at, for example, E1, the first ever smoker, and --
A. Right.
Q. -- you determine whether he is in or out of a nursing home; right?
A. Right.
Q. The O means out?
A. Right.
Q. And an I would mean in; right?
A. Right.
Q. Now the columns are ages, right, 67 -- strike that -- 66 through 70; right?
A. Right.

Q. All right. So if you look at age 66 for the ever smokers, it appears there is one ever smoker in the nursing home; right?

A. Right.

Q. If you look at never smokers at age 66, there are none.

A. Right.

Q. But at age 60 -- at age 66, all the ever smokers are alive, right, E1 through E6?

A. Right.

Q. And all the never smokers are alive; right?

A. Right.

Q. Now if you go to age 67 --

A. Yeah.

Q. -- there appears to be one smoker in the nursing home.

A. Right.

Q. That's E4; right?

A. Yes.

Q. And then there are two smokers, E5 and E6, who are outside the nursing home; right?

A. Right.

Q. E1, E2 and E3 have all died; right?

A. Right.

Q. Now if we go to the never smokers, it appears

that at age 67 only one is in the nursing home; right?

A. Right.

Q. But all six are alive; right?

A. Right.

Q. If we go to age 68, you look at the ever smokers, there is one ever smoker in a nursing home; right?

A. Right.

Q. And one who is not in a nursing home; right?

A. Right.

Q. But four have died at age -- by age 68.

A. Right.

Q. Then if we look at never smokers, two are in a nursing home; right?

A. Right.

Q. And four are out of the nursing home; right?

A. Correct.

Q. All six are alive; right?

A. Correct.

Q. And the same is true for ages 69 and 70; right?

A. Except that --

Q. Go ahead.

A. -- one of the never smokers has died.

Q. I'm sorry, yeah. Right. One never smoker in

four died at age '69; right?

A. Right, right.

Q. Now was this table actually based on the NHANES data?

A. No. Again it was just what I wanted to do was just give an example of -- of how using Zeger's approach you get the wrong answer, that if you look, the costs of ever smokers doing a longitudinal approach in this example -- right? -- would have been less than the costs of the never smokers and, you know, again here assuming these are matched, and you can do the hypothetical, had these people never smoked -- right? -- they would have had higher costs. I think I assumed that each year costs 10,000, just an assumption, so that would have been 50,000 versus 70,000, so had these individuals, in this example, never smoked, costs would be 70 rather than 50. However, if you do the Zeger et al approach you get a number -- I don't remember the exact number. I listed it somewhere. Right. You -- the number, the true number is, in this example, minus 20; right? When you look at it in the reverse direction, that as costs -- well, he can do it either way. Costs would have gone up had they never smoked by 20,000 where if you use the Zeger calculations you

would get that had they never smoked costs would have gone down by 14 some odd thousand dollars. So it was just meant to show how not doing a longitudinal approach can give you the wrong answer.

Q. And in your example, you are presuming that smokers did not live as long as never smokers; right?

A. Well in this particular example, there were mortality differences and the way -- in this example I wrote it down, mortality rates were higher for smokers than for nonsmokers.

Q. And you based that on your belief that smokers die sooner or prematurely; right?

A. Well I -- I may have done it based on my beliefs. You know, like I say, I've never studied this in detail. I may have just wrote down the example. I could have wrote down an example with any type of mortality rate in it, I could have wrote it down never smokers die more than ever smokers and I'm sure if I did it that way, whatever answer I got doing the correct approach, I would have got the wrong answer in the Zeger approach.

Q. Well did you --

A. So this is just an example.

Q. -- attempt to calculate this example where the never smokers died sooner than ever smokers?

A. I don't think I did many different examples, no. I just needed one to show the approach was wrong, that it would give you the wrong answer.
Q. And in your example, by age 70 there are two smokers left alive; right?
A. In this particular example, the way I wrote it.
Q. And there are five never smokers left alive; right?
A. Right.
Q. And what is -- What was the basis for your conclusion that only two smokers would be left alive versus five never smokers?
A. Well like I said, there was no basis at all. This is simply just an example to show how when you don't apply a longitudinal approach but instead applied an approach used by Zeger et al you will get the wrong answer. I could do many, many more examples but I, you know -- with varying mortality rates and come up with the fact that they will get the wrong answer in those cases, too.
Q. Is it your testimony that mortality rates have absolutely no bearing whatsoever on calculating smoking costs in nursing homes?
A. I'm sure that mortality probably does come into play but to do the calculations correctly, you really

don't have to analyze mortality. You let the chips fall as they may. You do a longitudinal approach, you add up the costs over time that actually occurred and compare them to the counter factual and that's the answer, that's the correct approach.

Q. When you say the "chips fall where they may," what you are talking about is whatever the effect of smoking is on people, you measure; right?

A. Well you again don't have to concern yourself with any of the particulars on the effects of smoking on disease per se because, you know, disease is not what you are interested in as an endpoint. You are interested in costs; right? And therefore to do the correct approach, what you do is, again, look at when the action occurred, look at what would have occurred had the action not occurred, look at the costs that actually occurred and compare them to that counter factual and add those costs up over time. And you could do it ad infinitum and see which one's higher. That's how you do it.

Q. Now if the authors of this New England Journal say that more nonsmokers than smokers live to old age, for example at age 70, 78 percent of male nonsmokers are still alive as compared with only 57 percent of smokers --

A. Right.
Q. -- would you disagree with that?
A. I have no evidence right now to agree or disagree with that.
Q. So you have no evidence to dispute that; right?
A. Not at this time.
Q. And if that's the case, then there are going to be fewer smokers in nursing homes at an old age than nonsmokers; right?
A. It's not necessarily true. I don't know. I mean that they are just talking about ages, I mean, depends on what sort of diseases, but again I don't need to know all that to do an economic damage calculation.
Q. And it's your testimony today that the mortality rates of smokers versus nonsmokers plays no part whatsoever in your nursing home calculation; right?
MR. GARNICK: Asked and answered.
A. I think I answered that.
Q. I'm not sure you did, I'm not sure that you have given me a clear answer as to whether it does play a role or doesn't.
A. What I said was, whatever role it plays, I mean there are certainly -- certainly mortality enters into calculations but I don't need to look at

mortality. All I know is the correct way to do an economic damage calculation is to look at costs over time. I don't need to go out and independently investigate any sort of mortality effects and I didn't. All I do is say here's the time of the action, let's look at the costs that occurred and compare it to what would have occurred had the action not occurred and look at that over time out into the -- as far into the future as you want to go.

Q. And if people die, you're obviously going to take that into account when you take that approach; right?

A. Whatever affect costs affects costs. I don't need to look at -- I never independently investigated what was driving all these differences.

Q. I'm not asking you whether you independently investigated mortality rates, sir. All I'm asking you is: When you count up these numbers --

A. Right.

Q. -- as you say you do, whether people are alive or dead will be part of the count; right?

A. I'm sure it is one of the factors that goes into it.

Q. And using your method, you don't take into account just those costs for people who are alive in

nursing homes; right?

A. Well that -- what I'm doing is, again, looking at, in this case not directly costs because assuming that maintenance costs per unit of time are the same, what I'm doing here is simply looking at, for this particular window of time, what the duration or trying to come up with an estimate of the comparison of what the duration is for ever smokers and what it would have been had they never smoked.

Q. What you don't do is just try to determine what the costs are for those people who are alive in nursing homes; right?

A. Well I mean this is just a duration-difference study. To get to the 2 point billion I do then use the cost data from MSIS. Actually I just use that modified plaintiffs' program to give me those cost figures, so in that case those costs.

Q. But you didn't just measure people who were actually in nursing homes; right?

A. I didn't measure --

Q. Clearly in your calculation here, you are taking into account people who aren't alive, right, on Table 20?

A. What I'm doing is, I am calculating costs over time.

Q. And when you do that, you are taking into account that ever smokers E1, E2 and E3 died at age 67; right?

A. Well whatever is going to affect costs is taken into account and that particular example, which is just an example -- right? -- if that in fact affects costs, that's what you do. That's the only way to do economic damages, you look at costs over time, and what would have occurred had the action not occurred and what actually occurred and compare them. That's just the right way. I can't tell you -- There is many, many things that go into what affects costs, mortality of which is one. And I don't need to really go into which one is driving the results or not.

Q. No. And I'm not asking you if -- if one or another is driving results. I'm just asking whether or not your method takes into account the fact that there is premature death or mortality based on smoking-related diseases.

MR. GARNICK: Asked and answered about 16 times.

MR. HAMLIN: I don't think I asked that question. I know he didn't answer.

A. I think I did. Again, my approach will take

into account anything that affects costs in both the factual or the actual and the counter factual.

Q. Including premature mortality based on smoking; right?

A. I've never investigated that.

Q. If that's the case --

A. I will take into account -- I will take into account anything, mortality differences, whatever way they are. The only way to look, do a proper cost calculation or damage calculation, is to do it longitudinally and look at costs over time in the case where the behavior occurred versus the case where the behavior didn't occur and to start the calculation at the time, the alleged time that the behavior occurred and go forward into the future. For an individual, like I say, you could go forever. Of course ultimately they will have lots of zeros there but that's the way to do economic damages.

Q. And your Table 20 is an example of your method about how to do economic damages; right?

A. The main purpose of this table was to show how Zeger's method fails to give you the right answer in terms of doing it appropriately so they do not get the correct answer and I could have done any sorts of examples but this is the one I chose.

Q. Is Table 20 an example of your methodology?
A. Well it will show, I mean if you go longitudinally, and I think I mention it here, you will get -- I mean it shows the correct answer is, yeah, when you look at the costs, smokers cost 50,000 doing it longitudinally, and assuming this is a proper comparison, which I've assumed in the table, had they not smoked, the cost would have been 70. Now I ignored other factors that go into an appropriate model. My main point was to show that when you apply the Zeger approach you get an answer that's pretty much the reverse.
Q. By coming up with this difference of $20,000, you do that by taking into account the fact that certain of the smokers died; right?
A. Well I'm just adding up costs, whatever is coming into that. In this example, there are mortality differences the way I wrote it, but certainly those come into play.
Q. Yeah. All I'm asking is, this example, the way you wrote it, you included these mortality differences; right?
A. Right. But I'm saying I could have done anything and would have got the wrong answer.
Q. You used your method in Table 20 to come up with

what you thought was the right answer; right?
A. Well the way that economic methodology suggests or basically states that you should calculate damages, I did that.
Q. In -- in Table 20; right?
A. Right.
MR. GARNICK: Counsel, would this be a good time for a break?
MR. HAMLIN: Sure, sure.
(Recess taken from 10:22 to 10:32 a.m.)
BY MR. HAMLIN:
Q. I want to direct your attention to page 22 of your report.
A. Okay.
Q. Where you reference Table 20. You say, "as we can see from Table 20, the costs to the state of ever-smokers is $50,000." Do you see that?
A. Right.
Q. Now you got the $50,000 by simply counting up the number of ever smokers in the nursing home and then multiplying that times $10,000; right?
A. Right.
Q. So here in Table 20 it appears we have five ever smokers in the nursing home; right?
A. Five ever smoker years.

Q. Five ever smoker years.
A. Right.
Q. And then you multiply that times 10,000 and you get $50,000; right?
A. Right.
Q. And that's how you got your $50,000 referenced on page 22.
A. Right.
Q. Okay. And then you say that the costs of never smokers is $70,000. Again you look at never smoker years and count them up and multiply by 10,000; right?
A. That's the -- the easy way to do it. I mean, the one alternative way which gives you the same answer is to say that the average, I think I report here the average time and -- spent in nursing homes is .83 years per person for ever smokers and then you would multiply that by -- I mean so then you multiply that by the six and then get the 10,000 to get the 50, so yeah. The easy way is to count them up.
Q. That's another way. I want to be sure I understand the table.
A. That's how you can do it.
Q. Okay. And I see, for example, never smokers, I see seven I's; right?

A. Right.
Q. At $10,000 apiece that gives me $70,000.
A. Right.
Q. Then you go on to say on page 22, "the true difference in costs between ever-smokers and never-smokers is not $14,265 but -$20,000"; right?
A. Right.
Q. And again that's illustrated on Table 20; right?
A. Right.
Q. Now did you calculate whether there is a different SAF for nursing home residents on Medicaid from those nursing home residents who have private insurance?
A. No.
Q. Do you think that would be important?
MR. GARNICK: Objection to form.
A. I think that -- let me back up.
The nursing home damages that are calculated by Zeger only are looking at Medicaid expenditures and therefore they don't -- Blue Cross doesn't have the nursing home costs, just the Medicaid, and therefore if whatever this smoking-attributable fraction was, like I said, their calculations have a lot of problems but it was significantly -- if you did it the right way and it was different for Medicaid

versus non-Medicaid because the composition of illnesses were different and so on and so forth, then you should apply the Medicaid SAF.

Q. Suppose there is no difference between the Medicaid SAF and the private SAF, what does -- what does that tell you?

A. Well I don't know if there is -- I mean that's kind of a leap of faith, to say that there is no difference.

Q. I'm asking you to assume for the purposes of my question that there is no difference.

A. I mean the -- if there was in difference, right, by assumption, you should apply the Medicaid SAF to the Medicaid expenses; right? But if there was no difference, the Medicaid SAF is the same as the non-Medicaid, then you could use a non-Medicaid SAF or any mixture which would also equal at same SAF, so --

Q. But you didn't calculate a Medicaid SAF and non-Medicaid SAF and compare the two; right?

A. Not at this time.

Q. Let me direct your attention to page 24 of your report.

A. Okay.

Q. You referenced the NMES-IPC data. Do you see

that?

A. Yes.

Q. Now that data doesn't that have smoking information; correct?

A. Correct.

Q. In the first full paragraph on page 24 you say, "Another problem with ZWM's nursing home analysis is they make no attempt to control for factors other than age and gender which may be related to both smoking and nursing home stays."

A. Right.

Q. Then you say, "Excluding such factors can produce incorrect estimates." What other factors are you referring to?

A. Well I don't have an exhaustive list in my head but it potentially could be certain demographics, marital status, race. I mean, you know, you could control for many more things.

Q. Is that information in NHANES?

A. Yeah, there is -- there is information on marital status, education, race. Those sorts of things, are in NHANES.

Q. Did you run a model controlling for those other variables?

A. I've, in my analysis, I did put in some of these

variables. I didn't take it to the final cost calculations but I didn't find much difference in my calculations, whether or not I controlled these. I didn't do it for Zeger's calculations to see whether it made a difference or not, not at this time.

Q. So you made a calculation yourself and you attempted to control for some variables; is that right?

A. Right. I don't remember exactly which ones. I think race, marital status, education were at least three of them. There were a couple others.

Q. And it didn't make much difference?

A. Not to my memory. That's why I didn't --

Q. I want to be clear about the calculation you are talking about. Can you identify what calculation you are referring to?

A. Right. I believe -- Well I didn't keep this output but if memory serves me correct what I did was a sort of a tobit model on nursing home days and put in some of these factors and then did this computation of the difference between ever smokers and nonsmokers and got similar results. I don't remember if it was on the final data that I actually used it in this calculation or some other version of data I was toying with at the time but whatever it

was it was pretty similar to what I found without controlling for them in my approach and therefore I didn't at the time worry about it too much according to my approach and went with just what -- with what I had.

Q. Now you say your "approach," are you talking about one of the examples that you included in this report?

A. No. The calculations from the NHANES that are on Tables 21 and 22 that play a part in getting that 2.03-billion-dollar number. I didn't ever take those -- the numbers -- what I did, I believe if memory serves me correct, is just looked at these average number of days, Table 22, when controlling for some of these characteristics like -- like race and marital status and education. There may have been a couple others but I don't remember exactly. And then looked at these differences, you know, doing the analysis separately for men and women.

Q. And it didn't make much difference?

A. And I don't know if I did it with the finalized data that I actually used here but whatever stage I was at, it didn't make much difference.

Q. And as you said, you haven't put those variables into the Zeger model?

A. Right.
Q. So you don't know whether those variables would increase or decrease plaintiffs' damages; right?
A. Yeah, I don't know what it would do.
Q. I believe you testified yesterday you had conversations with Dr. Ahlburg about the Zeger model.
A. Yes.
Q. How many conversations did you have?
A. I don't remember. I mean, a lot. I mean --
Q. Were lawyers present when you were discussing this model with Dr. Ahlburg?
A. I think that -- Well most of my discussions with Dr. Ahlburg were just me and Dr. Ahlburg. I think we both met with lawyers at some time but I don't think -- the discussions I'm referring to was, I was either at his house or he was at my house and we were working on this together.
Q. Did Dr. Ahlburg advise you that he had done any sensitivity tests on the Zeger model?
A. I don't -- I mean in terms of doing data work, I don't believe Dr. Ahlburg did any. I did all -- any sort of data work, he did a lot of examination of the data that was produced and commenting on that but any adding variables or whatever with the data, any

re-analysis was all done by me.

Q. Did Dr. Ahlburg make any comments on NMES?

A. I don't remember any specific comments. We certainly talked about NMES but I guess I would need more information, what you are referring to. I don't necessarily think he --

Q. Did he have any opinions about whether NMES was a good data set?

A. I don't remember explicitly talking to it. We both knew it was more of what we would consider a more cross-sectional data set but I don't remember any specific discussions or -- I can't give you a specific instance.

Q. Now did Dr. Ahlburg advise you of any data sets that he was aware of that were better than NMES?

A. I don't believe we were discussing any other sorts of data.

Q. Did you discuss with Dr. Ahlburg creating a -- a model to show the effect of defendants' conduct on smokers?

A. Well we discussed what the correct approach to analyzing economic damages were. We didn't discuss, I don't think we were ever asked to develop a model that we were going to actually then come up and estimate that, so we talked generally about what is

the right approach to calculating economic damages and this is the right approach. But I mean are you saying did we specifically try to devise a model we would take to some data and estimate? Is that what you are referring to, or just a general -- I mean we talked generally about what the right approach was.

Q. But you never talked about actually preparing such a model?

A. No.

Q. Did Dr. Ahlburg ever tell you he did not think it would be possible to prepare such a model based on the data that was out there?

A. I don't remember ever hearing that from him.

Q. Did you talk to any of your colleagues about this case?

A. No. I may have mentioned that I was on the case but I never mentioned any specifics.

Q. Okay.

MR. HAMLIN: Why don't we break for five minutes. I may be done.

MR. GARNICK: Okay.

(Recess taken from 10:49 to 10:53 a.m)

BY MR. HAMLIN:

Q. Let's go back to your report.

A. Okay.

Q. Page 16.
A. Okay.
Q. You are talking about calculating this implied SAF for broken bones and poisoning.
A. Right.
Q. Now as I understand it, you simply selected out a small number of these medical conditions and then attempted to develop a SAF for those; right?
A. Right.
Q. On page 16 you state, "Given the small number of medical conditions used, the only additional SAF's we were able to analyze were of ambulatory and prescription expenses for all six age/gender categories and the hospital expenses of men and women 35-64."
A. Right.
Q. Why is that? Why were you limited in the number of SAFs you could develop?
A. Right. One of the main problems came in the last stage of the Zeger model -- not the last stage, the last stage of the sort of basic model that they applied to NMES, which is log expenditures, conditional on them being positive.
Q. Positive.
A. And in some of those subgroups, there was not

enough -- well there is two problems. In a couple of them there was not enough individuals who had positive expenditures to estimate those.

Q. For the conditions that you identified?

A. Right. In those subgroups. In other cases, I wanted to stick to the Zeger model so I didn't want to put other variables in or do a different approach at that stage. In a number of other cases, I don't know how many of each one, but in some cases when you calculated these models with the heteroskedasticity collection they were using, that part of it wouldn't work and the estimates couldn't converge. In that instance there is a maximum likelihood routine and because of these complicated heteroskedasticity corrections, given the sample sizes, you couldn't get convergence.

Q. So when you attempted to calculate these SAFs for the medical conditions you list here you did run into difficulties in the model; right?

A. For certain age groups.

Q. And also for certain services; right?

A. Well, I mean -- yeah, I mean, like I said, for certain -- I guess it would be more exact, for certain service age gender subgroups.

Q. You ran into some problems?

A. Some problems, using their exact model.
Q. Could it be that the model wasn't designed to estimate a SAF for these kinds of conditions?
A. Well remember that these conditions are included in their analysis. I think, though, in terms of the calculations, like I described before, that the problems came mainly due to this -- for some of these smaller groups, you know, you didn't have many individuals with positive expenditures so the sample sizes in that last step were small. You know, had you had a million observations you could have run the model.
Q. But there weren't enough observations?
A. In the NMES for those particular cells, that one step of the model.
Q. Now you're not saying that Zeger et al are wrong when they say they used a third reduction to determine how many more dollars; correct?
MR. GARNICK: Objection to form.
A. Well I'm saying their whole approach is wrong so conditioning on a whole bunch of factors? I mean, assuming what, what, what, what, is this okay?
Q. No. I'm simply saying, this is what I'm asking you, Zeger et al say that they do a third reduction; right?

A. Yes, they do say that.
Q. Do you have any reason to believe as you sit here today that they didn't do a third reduction in these models apart from the nursing home model?
A. I have no reason to believe they didn't do it.
Q. I mean --
A. Again --
Q. I mean you don't have an opinion as you sit here today that Zeger et al did not do a third reduction.
A. Well I believe that the way they split out the third reduction mainly comes into the aspects of the core model. Off the top of my head, I can't remember seeing an explicit third reduction in the diminished-health-status model. May have been automatically combined in but I don't think they broke it out and I didn't see an example in their paper of third reduction for diminished health. They mentioned diminished health very briefly in the report compared to how much time they spent on the core model.
Q. Are you saying that they didn't do a third reduction in the diminished-health-status model or you just don't know at this point?
A. They do but I don't remember them breaking it out explicitly.

Q. And they do a third reduction in the disease model; right?
A. Right.
Q. And they do a third reduction in the core model.
A. Right. But I think they spend more time talking about it explicitly, in isolation, in the core model.

MR. HAMLIN: That's all I have. Thank you.

MR. GARNICK: Thank you.

(Deposition concluded at approximately 11:00 o'clock a.m.)

C E R T I F I C A T E

I, David A. Campeau, hereby certify that I am qualified as a verbatim shorthand reporter; that I took in stenographic shorthand the foregoing deposition of BRIAN P. McCALL, Ph.D. At the time and place aforesaid; that the foregoing transcript consisting of pages 236-312 is a true and correct, full and complete transcription of said shorthand notes, to the best of my ability; that the noticing party has been charged for the original transcript, and that ordering parties have been charged the same rate for such copies of the transcript.

Dated at Lino Lakes, Minnesota, this 18th day of October, 1997.

_____

SIGNATURE PAGE

I, BRIAN P. McCALL, Ph.D., the deponent, hereby certify that I have read the foregoing transcript consisting of pages 236-312, and that said transcript is a true and correct, full and complete transcription of my deposition, except per the attached corrections, if any.

(Please check one.)

____ Yes, changes were made per the attached (no.) _____ pages.

____ No changes were made.

_____

BRIAN P. McCALL, Ph.D.

Sworn and subscribed to before me this day of , 199__.

_____

Notary Public

My Commission expires: (DAC)